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By-Niyekawa-Howard, Agnes M.

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In the translation part of this study, 22 Japanese short stories were translated into English by native speakers of English and 20 English short stories were translated into Japanese by Japanese. The passive passages in the Japanese version were classified into either adversative or non-adversative passive. (See related documents AL 001 564 and AL 001 565.) They were then compared with the corresponding passages in English to determine equivalence of translation. Distortion in translation was found to be in the direction of the translator's way of perceiving things in terms of his first language. The perception study compared the perception of Japanese with that of Americans by using stick figure cartoons depicting interpersonal conflict situations with negative outcomes. As hypothesized, Japanese were found to have a greater tendency than Americans to attribute responsibility to others. In order to separate the role of language from other crucial cultural factors in the perception of interpersonal events, 20 monolingual (English-speaking) Americans of Japanese ancestory and 90 Germans in Berlin were also tested. No significant differences were found between the Americans and Germans; but the English-speaking Japanese-Americans fell in between the Americans and the Japanese, closer to the Japanese. (DO)

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# A PSYCHOLINGUISTIC STUDY OF THE WHORFIAN HYPOTHESIS BASED ON THE JAPANESE PASSIVE

Agnes M. Niyekawa-Howard

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# A Psycholinguistic Study of the Whorfian Hypothesis Based on the Japanese Passive*

Agnes M. Niyekawa-Howard

M.I.T. and University of Hawaii

The Whorfian hypothesis of linguistic relativity, namely the hypothesis that language influences the speaker's way of perceiving the world, has attracted the attention of many anthropologists, linguists, philosophers and Psychologists. However, experiments using rigorous scientific methods did not appear until the 1950's, and most of the studies that have come out since have dealt only with vocabulary. Whorf himself emphasized the structural or grammatical aspects of language more and more in his later years, as the following statements, written shortly before his death in 1941, indicate.

> Because of the systematic, configurative nature of higher mind, the 'patternment' aspect of language always overrides and controls the 'lexation' (Nāma) or name-giving aspect. Hence the meanings of specific words are less important than we fondly fancy. Sentences, not words, are the essence of speech, just as equations and functions, and not bare numbers, are the real meat of mathematics (Carroll, 1956, p. 258).
>
> . . . language consists of discrete lexation-segmentation (Nāma-Rūpa) and ordered patternment, of which the latter has the more background character, less obvious but more infrangible and universal . . . . (Carroll, 1956, p. 269).

The idea that grammar should have greater influence on perception and cognition than lexicon, if language is to have any influence on these at all, appears to be sound. The freedom of choice of lexical items in the expression of ideas and concepts is great. When one cannot find the exact word with which to express one's idea, one can always use another related word and modify it with other words, while the freedom of choice of grammatical constructions is restricted. The meaning of words can change over time, new words can be created or borrowed as the need arises, but grammar is slow in changing. The choice of lexical items is carried out at a more conscious plane, and hence is under greater control of the speaker in comparison to choices made in grammatical constructions, which are almost automatic and unconscious for the adult speaker. Because

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ideas have to be expressed under the constraints of grammar, the relation between language and cognitive processes is likely to be stronger at the structural level.

The following psychological considerations tend to suggest that some relationship would be found between the structure of a language and the cognitive processes of its speakers if a perfect experiment were possible. It is now well established in psychological theories of perception and cognition that perception and memory are selective and distorted. This means that the distorted percept undergoes further change while it is stored in memory. The change is towards a meaningful whole -- ambiguous stimuli get structured, irrelevant details drop out, relevant points become sharpened, and unfamiliar or neutral objects are assimilated to more familiar ones. However, what is considered to be relevant, meaningful or familiar depends on the individual perceiver. Studies have shown that the individual's temporary needs as well as his attitudes and personality are factors contributing to selectivity and distortion of perception (Levine, Chein & Myrphy, 1942; Witkin et al., 1954).

It would then follow that if a culture lacks in objects of a particular shape, or emphasizes fine discrimination in a particular domain of culture, that people of this culture would tend to be selective in their perception in different ways from people of another culture with different emphases. It is thus not surprising that recent cross-cultural studies on perception, such as Allport and Pettigrew's (1957) or Segall, Campbell and Herskovits' (1966) found different degrees of susceptibility to optical illusions in various cultures. Selectivity and distortion in perception and memory are usually more noticeable when the stimulus is not well structured. The best designed experiments on the Whorfian hypothesis so far used linguistic data related to structural aspects of the stimuli, such as dimensions of color, shape, or size of visual objects, or length of vowels in speech sounds. A greater amount of selectivity and distortion may be expected in perception and memory of interpersonal behavior situations, which are less structured and which allow for greater freedom of organization and interpretation by the individual.

Such a distortion was expected to be found among speakers of Japanese on the basis of the adversative passive construction discussed in the preceding paper by Irwin Howard. The adversative passive has the semantic function of connoting that the subject of the sentence was involuntarily subjected to something unpleasant. When it is combined with the causative to form the passive causative, the resulting connotation is that, because the subject of the sentence "was caused to" take the action expressed by the main verb, he is not responsible for the act nor for the outcome. While these meanings can be expressed just as well in English with the addition of a phrase or clause, such as "therefore I am not responsible for it," such an addition makes the expression overt and conscious. The grammatical expressions in Japanese, on the other hand, are covert and subtle. In fact, most native speakers of Japanese are not even consciously aware of the semantic functions these constructions have. Yet, a Japanese speaker constantly makes a choice between the active and

passive before he expresses an event. If a sick person, for instance, informs his wife that he had a visit from X at the hospital, he would say "X visited me today" (Kyoo X ga mimai ni kita or Kyoo X ga mimai kite kureta) in the active unless he was not in a mood to receive visitors or X was someone he did not like, in which case he would report the event in the passive as "I was visited by X today" (Kyoo X ni mimai ni korareta). It was thus hypothesized that the availability of these grammatical constructions would induce the speaker to interpret interpersonal events in terms of the semantic features present in the adversative passive and the passive causative relatively more frequently than speakers of a language lacking in equivalent grammatical constructions, such as English.

The study consists of two main parts: Translation and Perception. In the Translation Study, approximately twenty Japanese short stories translated into English and twenty British and American short stories translated into Japanese (a total of 200 printed pages in each group) were examined. In all cases, the translation was done into the first language of the translator. That is, all stories in English were translated into Japanese by native speakers of Japanese and all stories in Japanese were translated into English by native speakers of English. The passive passages in the Japanese version were classified into either "adversative passive" or "non-adversative passive," including translation style passive, and then were compared with the corresponding passages in the English version to determine equivalence of translation. The hypotheses tested were: (1) that information regarding the semantic function of the adversative passive will be lost in Japanese to English translation because the American or British translator is likely to find the connotative meaning of the adversative passive superfluous and nonessential, and thus be insensitive to these; and (2) that in English to Japanese translation, such information not present in the English original will be added, because the Japanese translator is likely to perceive interpersonal situations described in English in terms of these dimensions. The results are shown in Tables Ia and b.

Tables Ia & b. Chi Square Analyses of Type of Passive by Translation Equivalence

Ia. Japanese to English Translation

| Type of Passive | Translation Equivalence: Equivalent | Not equivalent | Total |
|---|---|---|---|
| Adversative | 145 | 196 | 341 |
| All Others | 405 | 40 | 445 |
| Total | 550 | 236 | 786 |

Chi Square = 217.41 ($p < .001$)

Ib. English to Japanese Translation

| Type of Passive | Translation Equivalence: Equivalent | Not equivalent | Total |
|---|---|---|---|
| Adversative | 130 | 159 | 289 |
| All Others | 567 | 21 | 588 |
| Total | 697 | 180 | 877 |

Chi Square = 362.03 ($p < .001$)

The "not equivalent" category consists largely of items that had information lost in Japanese to English translation and of items that had information added in English to Japanese translation. As can be seen, for both directions of translation more than 50 percent of the adversative passive passages are in the "not equivalent" category, while only less than 10 percent of the other types of passives fall into this category. The chi square values are far beyond the .001 level of significance. Distortion in translation, in other words, was found to be in the direction of the translator's way of perceiving things in terms of his first language.

Two additional hypotheses regarding our claim on linguistic change were tested. It was hypothesized that the more recently born authors and the more recently published short stories would show a higher frequency of usage of the translation style passive. That is, if the 22 original Japanese short stories are rank ordered according to the year of birth of the authors, or according to the year of publication of the stories, there will be a significant negative correlation between each of these two chronological variables and the relative frequency of occurrence of the translation style passive (the average frequency of occurrence per page). No such relationship was predicted for the adversative passive. The results are shown in Table II.

Table II. Correlations Between Relative Frequency of Passive and Indices of Time

| Type of Passive | Time: Author's Birthyear (1864-1925) | Year of Publication (1889-1954) |
|---|---|---|
| Translation Style | -.68** | -.58** |
| Adversative | .14 | .01 |

** $p < .01$

As hypothesized, the correlations between the relative frequency of occurrence of the translation style passive and the two chronological variables were negative and significant at the .01 level, indicating that there is an increase in the use of the translation style passive over the span of approximately 60 years covered by the two indices. On the other hand, there was no significant correlation between either index of time and the relative frequency of use of the adversative passive, indicating that the use of the adversative passive is independent of time, and has not shown any significant increase or decrease over the 60 year period. Our claim that the translation style passive is a recent innovation was thus indirectly supported.

The Perception Study compared the perception of Japanese with that of Americans. Stick-figure cartoons depicting interpersonal conflict situations with negative outcomes were used as visual stimuli; responses were measured by a questionnaire. On the basis of grammatical features of the adversative and passive causative, the hypothesis was tested that Japanese would have a greater tendency than Americans to attribute responsibility for the outcome to others rather than themselves. 273 Japanese students from universities in Tokyo and 153 American students from East Coast universities were used as subjects. While there was some fluctuation depending on the situation represented by the cartoon, the overall difference between Japanese and Americans was significant at the .001 level in the predicted direction. Japanese were found to have a greater tendency than Americans to attribute responsibility to others.

In order to separate the role of language from other crucial cultural factors in the perception of interpersonal events, two additional samples were tested. They were a small group of 20 monolingual (English speaking) Americans of Japanese ancestry in Hawaii and 90 Germans in Berlin. The major cultural factors outside of language that are likely to induce the type of behavior we have observed among Japanese are hierarchical structuring of interpersonal relationships in the society and acquiescent tendencies, both characteristic of an authoritarian culture. The above two groups were assumed to have received such cultural influences without getting the support from language that Japanese are getting. As far as the issue of attribution of responsibility is concerned, the findings were in the expected direction. The English-speaking Japanese-Americans from Hawaii fell in between the American and Japanese groups, although more different from the mainland American group ($p < .05$) than from the Japanese in Japan ($p < .10$), suggesting that nonlinguistic aspects of culture have a great influence on perception. The Germans, on the other hand, were more like Americans than Japanese in their attribution of responsibility. The Japanese-German difference was significant at the .001 level in the predicted direction, while there was almost no difference between the Germans and Americans. In other words, Japanese consistently showed a greater tendency to attribute responsibility to others than any other group tested.

We would expect cultural factors other than language to exert influence on perception. However, it is suggested that if the language has features corresponding to themes present in the nonlinguistic aspects of the culture, language is likely to reinforce and solidify the perceptual habit induced by these nonlinguistic aspects of the culture.

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